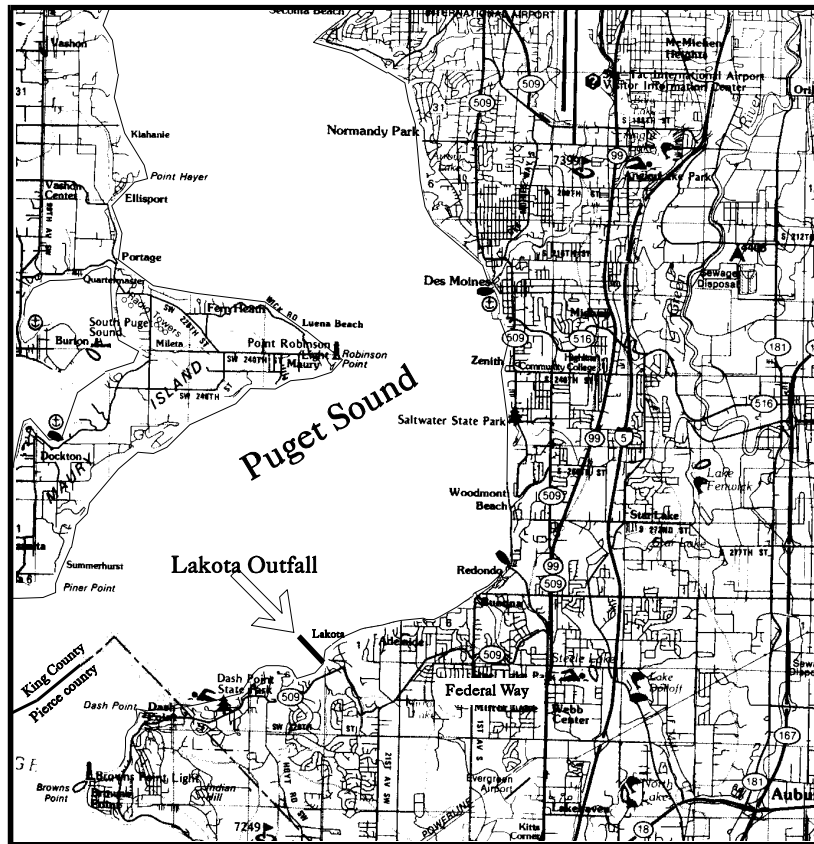


FACT SHEET FOR NPDES PERMIT WA-002262-4 LAKEHAVEN UTILITY DISTRICT - LAKOTA



LAKOTA VICINITY MAP

This fact sheet is a companion document to the draft National Pollutant Discharge Elimination System (NPDES) Permit for the Lakota Wastewater Treatment Plant (WWTP). The fact sheet explains the nature of the proposed discharge, the Department of Ecology's (the Department's) decisions on limiting the pollutants in the wastewater, and the regulatory and technical basis for those decisions. The fact sheet and draft permit are available for review (see *Appendix A—Public Involvement* for more detail on the public notice procedures). A glossary of terms used in the fact sheet and permit are included in Appendix B.

GENERAL INFORMATION	
Applicant:	Lakehaven Utility District – Lakota WWTP 31627 - 1st Avenue South PO Box 4249 Federal Way, Washington 98063
Facility Name and Address:	Lakota Wastewater Treatment Plant 3203 SW Dash Point Road Federal Way, Washington 98023
Type of Treatment:	Activated Sludge
Discharge Location:	Dumas Bay - Puget Sound Latitude: 47° 20' 09.267" N Longitude: 122° 22' 54.286" W
Water Body ID Number:	WA-PS-0270, South Central Puget Sound

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (chapter 173-221 WAC), water quality criteria for surface and ground waters (chapters 173-201A and 200 WAC), and sediment management standards (chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty (30) days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see *Appendix A—Public Involvement* of the fact sheet for more detail on the public notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in *Appendix D—Response to Comments*.

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

Lakehaven Utility District, formerly known as Federal Way Water and Sewer District, owns and operates two wastewater treatment plants, Lakota and Redondo, that discharge to Puget Sound. The Lakota WWTP is the larger of the two with a capacity of 10 million gallons per day (mgd). The plant currently serves a population of 63,000 people. Originally built as a primary treatment plant, Lakota was upgraded and began operation as a secondary treatment plant in 1990.

COLLECTION SYSTEM STATUS

The Lakota plant is fed by about 150 miles of collection system piping and 13 pump stations. The sanitary collection system is separate from the storm drainage system. The District completed a comprehensive wastewater system plan in 1999. A collection system analysis found that the piping within the Lakota basin is sufficiently sized for existing flows, and that all pump stations, force mains, and siphons are functioning properly. Redirection of some flows from Redondo to Lakota was recommended since the Redondo plant has limited capacity and Lakota could potentially be more efficient with larger flows. It was concluded that Infiltration/Inflow (I/I) in the Lakota basin is not a significant problem, but various I/I and flow reduction programs were recommended. The district has an I/I rehab program which has been dealing strictly with improvements in the Redondo basin area.

TREATMENT PROCESSES

The treatment train consists of preliminary treatment using mechanical bar screens and aerated grit removal, primary sedimentation using clarifiers, secondary treatment with activated sludge followed by secondary clarifiers, and disinfection with UV. Dissolved oxygen levels in the three activated sludge aeration basins are controlled to approximately 2 mg/L. Most process units at the plant are covered with hatches and lids for odor control. Influent flow is calculated as the sum of influent measured flow plus flow measured at one pump station that enters the plant downstream of the influent flow meter. The plant has septage receiving facilities and currently accepts about 3,000 gallons of stormwater and septage per month. A schematic of the treatment processes is included in Appendix E.

The Lakota plant is staffed five days a week from 6:30 a.m. to 5:00 p.m. Weekend coverage consists of one operator for a period of two hours to conduct a facility inspection and routine tasks. Lakota is a Class 4 plant and has eight certified operators. The Lakota laboratory is currently staffed from 7:00 am to 3:30 pm, seven days per week. Approximately three industrial users discharge to Lakota's collection system. Lakota tracks its industrial users, but does not have a delegated pretreatment program. The Department of Ecology administers any necessary pretreatment permits for industrial users discharging to the plant.

DISCHARGE OUTFALL

Secondary treated and disinfected effluent is discharged from the facility to Dumas Bay via a 36-inch diameter pipeline from the plant to the beach. The 36-inch pipe ties in to a 24-inch diameter outfall pipe extending 2,670 feet offshore and discharging at a depth of 184 feet. There is no diffuser on the end of the pipe.

RESIDUAL SOLIDS

Primary and secondary solids are processed in anaerobic digesters, dewatered by belt press, and trucked from the plant to a contract composting operation. Grit is disposed of with sludge. Screenings are currently compacted and trucked to a sanitary waste landfill.

PERMIT STATUS

The previous permit for this facility was issued on June 26, 1997; expired June 26, 2002; and was extended by the Department. The previous permit placed effluent limitations on 5-day Carbonaceous Biochemical Oxygen Demand (CBOD₅), Total Suspended Solids (TSS), pH, Fecal Coliform bacteria, and Total Residual Chlorine. The permit was later modified to remove the chlorine limit after the installation of a UV disinfection system. The modified permit was dated December 18, 2000.

An application for permit renewal was submitted to the Department on December 24, 2001, and accepted by the Department on May 2, 2002.

Table 1. Previous Permit Limits

Parameter	Monthly Average		Weekly Average		
	Maximum Concentration	Maximum Quantity	Maximum Concentration	Maximum Quantity	Minimum Reduction
CBOD ₅	25 mg/L	2085 lb/day	40 mg/L	3336 lb/day	85%
TSS	30 mg/L	2502 lb/day	45 mg/L	3753 lb/day	85%
Fecal Coliform	200/100 mL	----	400/100 mL	----	----
pH	Not outside the range 6.0-9.0				

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received a Class 1 inspection on November 7, 2002. The plant was found to be very well-maintained and operating well at this time.

During the history of the previous permit, the Permittee has remained in compliance, based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department. The only significant noncompliance occurred in August 1999, when the plant experienced a severe upset and violated effluent fecal coliform limits. This upset was caused by mechanical problems that resulted in high DO levels. The elevated DO levels put the activated sludge process into a nitrite lock condition, which ultimately increased the effluent chlorine demand. Steps taken to prevent future occurrences included reducing SRT, installing air control valves in the aeration basin header lines, and installing a UV disinfection system. Overall, Lakota has an excellent compliance record.

WASTEWATER CHARACTERIZATION

The concentrations of pollutants in the discharge were reported in the NPDES application and in Discharge Monitoring Reports. Table 2 displays a brief summary of effluent water quality data for January 2000-September 2002 for the Lakota WWTP. A more complete summary is found in Appendix F.

Regulated priority pollutant compounds detected in the effluent from 1997-2001 are itemized in Table 3, and are described in more detail in Appendix G.

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in an NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the surface water quality standards (chapter 173-201A WAC), ground water standards (chapter 173-200 WAC), sediment quality standards (chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

Table 2. Effluent Wastewater Characterization

Parameter	Concentration
Flow, annual average	3.85 mgd
pH, range	6.90-7.53
Fecal Coliform, max month	218/100 mL
CBOD ₅ , max month	18 mg/L
TSS, max month	22 mg/L
Ammonia-N, annual average, max month	28.6, 41.0 mg-N/L*
Nitrate-N (NO ₂ +NO ₃), annual average, max month	5.05, 12.00 mg-N/L*
Dissolved Oxygen, annual average, max month	5.58, 6.2 mg/L*

*source: DMR data except * values which are from permit application*

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

Table 3. Effluent Priority Pollutants, 1997 – 2001

Parameter	Max Effluent Concentration, µg/L
Arsenic	24.0
Total Chromium	3.0
Copper	78.0
Lead	4.0
Thallium	80
Zinc	85
Cyanide	46
Cyanide, week acid dissociable	13
Acrolein	1.70
Benzene	0.05
Bromomethane	1.00
Chloroethane	770*
Chloroform	1.7
Dichlorobromomethane	0.074
Methylene Chloride	1.6
Tetrachloroethene	0.062
Toluene	3.4
2,4-dimethylphenol	0.18
Phenol	0.14
1,4-dichlorobenzene	0.34
2,6-dinitrotoluene	0.55
Bis (2-ethylhexyl) phthalate	5.40
Di-n-butylphthalate	0.240
Alpha-BHC	0.014
endrin	0.049
endrin aldehyde	0.044
gamma-BHC	0.030
heptachlor	0.039

source: permit application

*considered anomalous. Second highest value was below detection level.

DESIGN CRITERIA

In accordance with Washington Administrative Code (WAC) 173-220-150 (1)(g), flows or waste loadings to a facility shall not exceed approved design criteria. Also, in accordance with WAC 173-220-130 (1)(a), effluent limitations shall not be less stringent than those based upon the design efficiency for the facility, which is contained in approved engineering plans, reports, or approved revisions. This facility is designed to provide a minimum of secondary treatment.

The design criteria for this treatment facility are taken from design drawings prepared by HDR Engineering, November 1987, and are as shown in Table 4.

Table 4. Design Criteria for Lakota WWTP

Parameter	Design Quantity
Monthly average flow (max month)	10 MGD
Instantaneous peak flow	22.2 MGD
BOD influent loading	17,515 lb/day
TSS influent loading	15,850 lb/day

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in chapter 173-221 WAC (state). These regulations are performance standards that constitute all known, available, and reasonable methods of prevention, control, and treatment for municipal wastewater. The technology-based mass limits shown in Table 5 are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b). The CBOD₅ limit is used in place of a BOD₅ limit because the plant has demonstrated interference from nitrifying bacteria in the BOD₅ analysis.

Monthly effluent mass loading (lb/day) for CBOD was calculated as the maximum monthly design flow (MGD) x Concentration limit (mg/L) x 8.34 (conversion factor) = mass limit (lb/day). Monthly effluent mass loading (lb/day) for TSS was calculated as the maximum monthly influent design loading (lb/day) x 0.15 = mass limit (lb/day).

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = mass limit (lb/day), except for CBOD in which monthly and weekly mass loadings are calculated separately based on concentrations of 25 and 40 mg/L, respectively.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established surface water quality standards. The Washington State surface water quality standards (chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the Washington State's water quality standards for surface waters (chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the water quality standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When

surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

Table 5. Technology-based Limits

Parameter	Limit
pH	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
CBOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 25 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 40 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
CBOD ₅ (mass)	Average Monthly Limit = 2085 lb/day Average Weekly Limit = 3336 lb/day
TSS (mass)	Average Monthly Limit = 2378 lb/day Average Weekly Limit = 3566 lb/day

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA, 1992). These criteria are designed to protect humans from cancer and other diseases and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the existing water quality shall be protected. More

information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the water body's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

THE WATER QUALITY STANDARDS ALLOW THE DEPARTMENT OF ECOLOGY TO AUTHORIZE MIXING ZONES AROUND A POINT OF DISCHARGE IN ESTABLISHING SURFACE WATER QUALITY-BASED EFFLUENT LIMITS. BOTH "ACUTE" AND "CHRONIC" MIXING ZONES MAY BE AUTHORIZED FOR POLLUTANTS THAT CAN HAVE A TOXIC EFFECT ON THE AQUATIC ENVIRONMENT NEAR THE POINT OF DISCHARGE. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control, and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls. However, a mixing zone may be authorized in accordance with chapter 173-201A WAC for an estuarine discharge. An estuarine mixing zone is allowed to extend horizontally a maximum of 200 feet plus the depth of water over the discharge port(s). The depth of the discharge at this facility is 184 feet at Mean Lower Low Water (MLLW). A smaller zone where acute water quality criteria may be exceeded extends ten percent of the mixing zone distance. The mixing zone for this discharge is defined as follows:

- The mixing zone extends a maximum distance of 384 feet (117 m) in any direction from any individual port. The mixing zone extends vertically from the outfall diffuser to an upper boundary at the water surface. The most restrictive upper boundary occurs at Mean Lower Low Water (MLLW).
- A zone where acute water quality criteria may be exceeded extends 38.4 feet (11.7 m) in any direction from any port.
- The mixing zone is depicted graphically in Condition S1.B of the proposed permit.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to Dumas Bay in south Puget Sound. This water body is designated as a Class AA (Extraordinary) receiving water in the vicinity of the outfall. Other nearby point source outfalls include Redondo WWTP, a 6 MGD facility, also in the Lakehaven Utility District, located 2.6 miles northeast of Lakota, and Midway (Des Moines) Sewer District, a 6 MGD WWTP located approximately 7.3 miles northeast of Lakota. Characteristic uses of the waterbody include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA, 1992). Criteria for this discharge are summarized in Table 6.

DILUTION MODELING

Dilution factors (the ratio of receiving water to effluent) that occur within this zone have been determined at the critical condition using dilution models. The outfall was modeled as part of a diffuser study completed for the Lakota WWTP. The Diffuser Report was submitted to the Department on September 30, 1994.

Ambient currents and water column density profiles were obtained from measurements taken on July 16, 1982, at ambient monitoring station no. 3 off Browns Point. For modeling, ambient currents were assumed to be 0.05 m/s.

Table 6. Water Quality Criteria for Class AA Waters

Parameter	Class AA WQ Criteria
Fecal Coliforms	14 organisms/100 mL maximum geometric mean
Dissolved Oxygen	7 mg/L minimum
Temperature	13 degrees Celsius maximum or incremental increases above background
pH	7.0 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix H for numeric criteria for toxics of concern for this discharge)
Ammonia*	One-hour (acute) average concentration of 5.87 mg/L total ammonia (4.83 mg/L as N). Four-day (chronic) average concentration of 0.88 mg/L total ammonia (0.73 mg/L as N).

* at pH 8.3, salinity 27.8 ppt, temperature 13.5° C, 10-percentile near worst-case conditions recorded at the East Passage near Three Tree Point (EAP001) ambient monitoring station from 10/24/88-9/23/91. See Appendix I showing a spreadsheet of these calculations.

Effluent dilution was modeled for reasonable worst-case conditions with the U.S. EPA's UM Model (contained in the PLUMES mixing model interface, Edition 3, March 14, 1994). At the chronic mixing zone boundary, dilution is based on a dry weather average design flow of 4 mgd, a 24-inch orifice, and a median ambient current speed of 0.05 m/s. The resulting dilution is 263:1.

An acute mixing zone dilution was calculated assuming a peaking factor of 2.05, to give a flow of 8.2 mgd. Acute mixing was modeled for a 24-inch orifice, current speed of 0.05 m/s. The resulting dilution at the boundary of the acute mixing zone is 24:1. Modeled dilutions are summarized in Table 7.

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in chapter 173-201A WAC and are summarized in Table 7.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near-field) or at a considerable distance from the point of discharge (far-field). Toxic pollutants, for example, are near-field pollutants—their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

Table 7. Dilution factors for this discharge

Current	Water Col. Data	Effluent Flow	Port Diameter	Acute	Chronic
0.05 m/s	Sta.3 off Brown's Pt	4 mgd	24"	--	263:1
0.05 m/s	Sta.3 off Brown's Pt	8.2 mgd	24"	24:1	--

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water. The impacts of CBOD, temperature, pH, fecal coliform, and toxics are evaluated below, considering the dilution factors described above.

CBOD₅—This discharge with technology-based limitations results in a small amount of CBOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature—The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 13.5° C and the effluent temperature is 22° C. The predicted resultant temperature at the boundary of the chronic mixing zone is 13.5° C. Because there is no predicted

violation of the water quality standards for surface waters, no effluent limitation for temperature was placed in the proposed permit.

pH—Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the water quality standards for surface waters.

Fecal Coliform—The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 colonies per 100 ml and a dilution factor of 263:1. Under critical conditions, there is no predicted violation of the water quality standards for surface waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants—Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the water quality standards for surface waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: ammonia, heavy metals, and pesticides (see Table 3 - Effluent Priority Pollutants and Appendix I). A reasonable potential analysis was conducted on these parameters to determine whether effluent limitations would be required in this permit to protect aquatic life (Appendix J) or human health (Appendix K).

The determination of the reasonable potential for toxic chemicals to exceed the water quality criteria was evaluated with procedures given in EPA, 1991, at the critical condition. The parameters used in the critical condition modeling are as follows: acute dilution factor is 24:1, chronic dilution factor is 263:1.

A determination of reasonable potential using zero for background resulted in no reasonable potential for all pollutants. Water quality criteria for metals in chapter 173-201A WAC are based on the dissolved fraction of the metal.

WHOLE EFFLUENT TOXICITY

The water quality standards for surface waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an

organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC₅₀, EC₅₀, IC₂₅, etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria*, which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center (360-407-7472) for a copy. Ecology recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

Acute toxicity was measured during effluent characterization in the previous permit term. Acute toxicity was found to be at levels that, in accordance with WAC 173-205-050(2)(a), have a reasonable potential to cause receiving water toxicity. An acute toxicity limit is therefore required. The acute toxicity limit is no statistically significant difference in test organism survival between the acute critical effluent concentration (ACEC), 4.17% of the effluent, and the control.

The acute toxicity limit is set relative to the zone of acute criteria exceedance (acute mixing zone) established in accordance with WAC 173-201A-100. The acute critical effluent concentration (ACEC) is the concentration of effluent existing at the boundary of the acute mixing zone during critical conditions.

Monitoring for compliance with an acute toxicity limit is accomplished by conducting an acute toxicity test using a sample of effluent diluted to equal the ACEC and comparing test organism survival in the ACEC to survival in nontoxic control water. The Permittee is in compliance with the acute toxicity limit if there is no statistically significant difference in test organism survival between the ACEC and the control.

Results of the acute toxicity characterization study indicate that ammonia is the likely toxicant in Lakota's effluent. It is recommended that the Permittee conduct a series of ammonia characterization tests in sequence with the required quarterly acute toxicity limit testing. If ammonia is the proven toxicant, an extensive TI/TR study may be avoidable should the acute limit be exceeded. It is advised that such an ammonia characterization study be performed in close interaction with the Department of Ecology. An ammonia characterization plan should be drafted and discussed with Ecology before testing begins.

Chronic WET test data obtained during effluent characterization are summarized in Appendix L. When the WET tests during effluent characterization indicate that no reasonable potential exists to cause receiving water toxicity, the Permittee will not be given WET limits and will only be required to retest the effluent prior to application for permit renewal in order to demonstrate that toxicity has not increased in the effluent.

If the Permittee makes process or material changes which, in the Department's opinion, results in an increased potential for effluent toxicity, then the Department may require additional effluent characterization in a regulatory order, by permit modification, or in the permit renewal. Toxicity is assumed to have increased if WET testing conducted for submission with a permit application fails to meet the performance standards in WAC 173-205-020, "whole effluent toxicity

performance standard." The Permittee may demonstrate to the Department that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the effluent is likely to have chemicals of concern for human health. The discharger's high priority status is based on the discharger's status as a major discharger. A determination of the discharge's potential to cause an exceedance of the water quality standards was conducted as required by 40 CFR 122.44(d). The reasonable potential determination was evaluated with procedures given in the Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) and the Department's *Permit Writer's Manual* (Ecology Publication 92-109, July 1994). The calculations for the human health reasonable potential are shown in Appendix K. The determination indicated that the discharge has no reasonable potential to cause a violation of water quality standards, thus an effluent limit is not warranted.

The permit requires continued annual testing for priority pollutants. If future data indicate the presence of pollutants with potential to violate water quality or human health standards, the Department may modify or reissue the permit to include limits for these pollutants.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

Divers inspecting the Permittee's outfall in July 1991, reported that there was no evidence of significant sediment deposition due to the outfall. Nevertheless, in compliance with provisions of the Department's *Permit Writer's Manual*, a screening evaluation for sediment impacts was conducted. This screening evaluation determined that the discharge has the potential to cause a violation of the sediment quality standards. Therefore, a characterization study of sediments in the vicinity of the discharge was conducted. The results from the characterization study performed in 2000 were inconclusive; therefore, a condition has been placed in the proposed permit which requires an additional characterization study of sediments in the vicinity of the discharge.

The sediment characterization study will document whether or not these potential contaminants are present in sufficient concentrations to require further actions, such as source control or sediment cleanup. Such actions, if necessary, will be addressed during the next permit cycle.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated ground water quality standards (chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and, therefore, no limitations are required based on potential effects to ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED 6/26/97

Technology-based secondary treatment requirements for CBOD, fecal coliform, and pH are the same in the new permit as in the existing permit, except as noted in Table 8. The requirement for TSS concentration is the same in the new permit as in the existing permit; however, the TSS mass limit has been slightly reduced. This is because the monthly effluent mass loading (lb/day) is determined from the more stringent of the following calculations:

$$\text{Mass limit (lb/day)} = \text{the maximum monthly design flow (MGD)} \times \text{Conc. limit (mg/L)} \times 8.34 \text{ (8.34 is a conversion factor), or}$$

$$\text{Mass limit (lb/day)} = \text{the maximum monthly influent design loading (lb/day)} \times 0.15.$$

For TSS, the second equation resulted in slightly lower mass limits, and these values are proposed in this permit, and shown in Table 8.

Table 8. Existing and Proposed Effluent Limits

Parameter	Previous Limits	Proposed Limits
CBOD ₅ , Max month, mg/L	25	25
CBOD ₅ , Max month, ppd	2085	2085
CBOD ₅ , Max week, mg/L	40	40
CBOD ₅ , Max week, ppd	3336	3336
CBOD ₅ , Min. Mo. Avg. Removal, %	85	85
TSS, Max month, mg/L	30	30
TSS, Max month, ppd	2502	2378
TSS, Max week, mg/L	45	45
TSS, Max week, ppd	3753	3566
TSS, Min. Mo. Avg. Removal, %	85	85
Fecal Coliform, Month Max, #/100 ml	200	200
Fecal Coliform, Weekly Max, #/100 ml	400	400
pH Range	6 - 9	6 – 9
Acute Toxicity	--	No acute toxicity detected in a WET test conc. representing the ACEC (4.17%).
Chlorine residual, Avg. monthly, µg/L	119	--
Chlorine residual, Max. daily, µg/L	312	--

In addition, limits for residual chlorine have been lifted since the installation of a UV disinfection system. An acute WET limit has been proposed as a result of toxicity levels indicated in the toxicity characterization study performed during the previous permit cycle. No chronic WET limit was required, but chronic WET characterization testing will be conducted in the final year of the permit.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved. Additional monitoring for priority pollutants is required because this facility receives industrial discharges. Sediment monitoring is required because past effluent analyses show a reasonable potential for this discharge to impact sediments.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Monitoring frequencies for TSS and CBOD have been reduced from the previous permit's requirement of five (5) samples/week down to three (3) samples/week. This reduction is based on the fact that Lakota, on average, operates at 56 and 40% of the previous permit requirements for TSS and CBOD, respectively. The relatively low coefficients of variance (COV) for these parameters, 55 and 51% for TSS and CBOD, respectively, also support a reduced monitoring schedule. Specified monitoring frequencies also take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 2002) for activated sludge treatment facilities.

In addition, a request was made to reduce fecal coliform sample frequency from seven (7) samples/week to three (3) samples/week. For an activated sludge facility with an average design flow greater than 5.0 MGD, the recommended sample frequency for fecal coliform is seven (7) samples/week. However, since the installation of the UV disinfection system at Lakota in 2000, the ratio of the long term average to the average monthly limit (LTA/AML) has been 0.48, with a standard deviation of 3.6, and a coefficient of variation (COV) of 1.43. According to the Permit Writer's manual, this data supports a sample frequency of 15 times per month. Therefore, a sample frequency of four (4) samples/week for fecal coliform has been granted.

EFFLUENT LIMITS BELOW QUANTITATION

The quantitation level is the level at which concentrations can be reliably reported with a specified level of error. For maximum daily effluent limits, if the measured effluent concentration is below the quantitation level, the Permittee reports NQ for non-quantifiable. For average monthly effluent limits, all effluent concentrations below the quantitation level but above the method detection level are used as reported for calculating the average monthly value.

EFFLUENT LIMITS BELOW DETECTION

The method detection level (MDL) is the minimum concentration of an analyte that can be measured and reported with a 99 percent confidence that its concentration is greater than zero as determined by a specific laboratory method. For maximum daily limits, if the concentrations are

below the MDL, the Permittee reports ND for non-detectable. For average monthly limits, all values above the MDL are used as reported and all values below the MDL are calculated as zero.

LAB ACCREDITATION

With the exception of certain parameters, the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory at this facility is accredited for BOD/CBOD, chlorine (residual), DO, pH, TSS, Turbidity, and fecal coliform. The LAN (lab accreditation number) is M028.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4 to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4 restricts the amount of flow.

OPERATIONS AND MAINTENANCE (O&M)

The proposed permit contains Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems, the Permittee is required in permit Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state water quality standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under chapter 70.95J RCW and chapter 173-308 WAC. The disposal of other solid waste is under the jurisdiction of the Seattle-King County Health Department.

OUTFALL EVALUATION

Proposed permit Condition S.11 requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to

determine the condition of the discharge pipe and to determine if sediment is accumulating in the vicinity of the outfall.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary, to meet water quality standards, sediment quality standards, or ground water standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this permit be issued for five (5) years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

Laws and Regulations (<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information

(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

APPENDIX A—PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page one of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public Notice of Application (PNOA) was published on May 3, 2002, and May 10, 2002, in the *Tacoma Tribune* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on May 22, 2003, in the *Tacoma Tribune* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30)-day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (425) 649-7201, or by writing to the address listed above.

This permit and fact sheet were written by Alison Evans.

APPENDIX B—GLOSSARY

Acute Toxicity—The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART—An acronym for “all known, available, and reasonable methods of prevention, control, and treatment.”

Ambient Water Quality—The existing environmental condition of the water in a receiving water body.

Ammonia—Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation—The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation—The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)—Schedules of activities; prohibitions of practices; maintenance procedures; and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅—Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass—The intentional diversion of waste streams from any portion of a treatment facility.

CBOD₅—The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five (5) days at a controlled temperature of 20 degrees Celsius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD₅ is given in 40 CFR, Part 136.

Chlorine—Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity—The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)—The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)—The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling—A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling—A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample—A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction Activity—Clearing, grading, excavation, and any other activity which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous Monitoring—Uninterrupted, unless otherwise noted in the permit.

Critical Condition—The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor—A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report—A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria—Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample—A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User—A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater—Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)—"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference—A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) [including Title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including state regulations contained in any state sludge management plan prepared pursuant to Subtitle D of the SWDA], sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility—A facility discharging to surface water with an EPA rating score of >80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation—The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)—The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility—A facility discharging to surface water with an EPA rating score of <80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone—A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)—The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/state permits issued under both state and federal laws.

Pass Through—A discharge which exits the POTW into waters of the state in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of state water quality standards.

pH—The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User—A potential significant industrial user is defined as an industrial user which does not meet the criteria for a significant industrial user, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day; or
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g., facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)—A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)—

1. All industrial users subject to categorical pretreatment standards under 40 CFR 403.6 and 40 CFR chapter I, subchapter N; and
2. Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of nondelegated POTWs or to the POTW in the case of delegated POTWs.

State Waters—Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater—That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit—A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)—Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset—An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Wastewater Control Facility—All structures, equipment, or processes required to collect, carry away, treat, reclaim or dispose of domestic wastewater together with the industrial waste that may be present.

Water Quality-based Effluent Limit—A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C—TECHNICAL CALCULATIONS

Note: See Appendices G and J through M for detailed technical calculations.

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at (<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>).

APPENDIX D—RESPONSE TO COMMENTS

The following is a discussion of the comments received on the draft permit during the public comment period, and the actions which were taken in response to the comments.

Formal Comments Received from Permittee

Comment 1:

Permit, p. 15, *S8.B. Monitoring for Compliance with an Effluent Limit for Acute Toxicity*

The statement that “*testing shall begin within thirty (30) days of the permit effective date*” is in conflict with the specified quarterly testing months of January, April, July, and October based on the tentative permit effective date of August 1, 2003. Elimination of this statement will not effect the testing requirements because the test months and other monitoring conditions are listed in this permit section.

Response to Comment 1:

The statement was revised to read “*testing shall begin within ninety (90) days of the permit effective date*”.

Comment 2:

Permit, p. 24, *G5. Plan Review Required*

“*Prior to constructing or modifying **any** wastewater control facilities, an engineering report and detailed plans and specifications shall be submitted to the Department for approval in accordance with chapter 173-240 WAC.*”

District staff would like clarification of what constitutes a “wastewater control facility”. Specifically, does this include developer and/or sewer extensions? Does wastewater control facility refer primarily to WWTP construction? Perhaps wastewater control facility could be defined in the glossary section.

Response to Comment 2:

The following definition of wastewater control facility was added to the fact sheet glossary:

Wastewater Control Facility—All structures, equipment, or processes required to collect, carry away, treat, reclaim or dispose of domestic wastewater together with the industrial waste that may be present.

The following additional wording was added to *G5. Plan Review Required*:

Engineering reports and plans & specifications for sewer line extensions and pump stations will not require submission for approval if the department approves a general sewer plan and a standard design criteria document. The department has approved Lakehaven’s general sewer plan and is in process of reviewing Lakehaven’s Sanitary Sewer Specifications and Design Criteria.

Formal Comment Received from Department of Health – Frank Meriwether

Comment 1:

The Fact Sheet (p. 16) explains why the Permit Manual's frequency of fecal coliform testing for this size of activated sludge plant (seven times weekly) was reduced to five times per week. However, the permit's monitoring requirements (S.2) state that the testing frequency is only four times each week for fecal coliforms.

Response to Comment 1:

The Fact Sheet was revised to read “reduced to four times per week” to be in agreement with the Permit.

Comment 2:

If shellfish harvest commences near Lakota, we request that the testing frequency for fecal coliform be returned to the recommended rate of seven times weekly. This will be more protective of human health and help ensure reliability of disinfection. This request is especially pertinent due to the proposed reduction of testing frequency for TSS from five times weekly to three times weekly. Since fecal coliform reduction varies inversely with TSS levels in the effluent for UV disinfection systems, a reduction in monitoring frequencies for both fecal coliforms and for TSS at the same time could reduce overall reliability of the disinfection system.

Response to Comment 2:

Comment noted. If shellfish harvesting resumes and the Lakota discharge is shown to have an impact on the harvest area, permit sample frequencies will be re-analyzed. If necessary, a permit modification will be performed to increase sample frequencies.